

## **REMARKS**

### **Specification**

The Office has indicated that detailed description of figure 5 is missing and the use of trademark PYREX® is not properly used. The specification has been amended in accordance with the suggestion of the Office.

### **Claims**

Claims 1-9 have been amended to improve readability. New claims 10 and 11 have been added herein.

New claim 10 is supported at page 13, lines 26-31 for example and new claim 11 is supported at page 7, lines 1-5 and by FIG. 1, for example. Currently claims 1-11 are pending.

Applicants respectfully request reconsideration of the application in response to the non-final Office Action.

### ***Claim Rejections – 35 USC §103(a)***

Claims 1-9 have been newly rejected under 35 U.S.C. §103(a) as being unpatentable over Jerman et al. (US Patent No. 6,469,415) in view of Sparks et al. (U.S. Patent No. 6,062,461).

In rejecting claims 1-2, the Office has stated that "Jerman [et al.] illustrates method limitations of claims 1 and 2 for forming a micro-actuator including: forming the components of the actuator from wafer by Deep Reactive ion Etch (DRIE)(col. 3, lines 6-7)...Jerman [et al.] does not teach: to form one body by forming a eutectic bonding layer between the first frame layer and second frame layer, as in claim 1...Sparks et al. teaches a process for bonding wafers (ti.) by forming a variety of metal layers to form a soldering ring, which is written on anodic, including a plating seed layer for micromachines (col. 6, lines 23-25), using a variety of metals (col. 5, lines 35-36), preferred process of eutectic bonding...It would have been obvious to one of ordinary skill in the art at the time of invention was made, to include the method of bonding MEMS as in the method of Sparks et al., with the method of forming MEMS, as in Jerman et al...." Applicants respectfully disagree.

German et al. patent discloses the structural/functional aspects of micro-actuators. Insofar as the method for manufacturing micro-actuators is concerned, it merely states a line "[t]he components of microactuator 507 are preferably etched from [a] wafer 542 by deep reactive ion etching (DRIE) techniques or the Lithographic Gavanometric and Abformung (LIGA) process...." (Col. 3, lines 6-7). The components of micro-actuator 507 in the line collectively refer to all of the elements comprising the micro-actuator. Thus, German et al. patent does not teach how each element of the micro-actuator is etched from a wafer. Apparently, to support the assertion that German et al. patent allegedly teaches the limitations of claims 1 and 2, the Office is relying on this line and several elements of German et al.'s device that allegedly have functional counterparts in the presently claimed invention. However, a review of German et al. reveals that the micro-actuators disclosed by German et al. patent have strikingly different structures and functional mechanisms from the presently claimed invention. For instance, it would be apparent to a skilled artisan that the micro-actuator illustrated in FIG. 1 of the present application is markedly different from those illustrated in FIGS. 1-12 of German et al. patent. For another instance, the micro-actuator of German et al. includes the second (driving) comb drive that has a bar or truss and comb drive fingers (or electrodes) extending from the bar. Then, two pads for receiving an optical element, such as reflector, are mounted on the bar. In some cases, the bar is connected to another bar or truss that is in turn coupled to a complicated counterbalance for the optical element. In contrast, the presently claimed invention includes a rectangular stage and driving comb-type electrodes formed on the bottom of the stage, wherein an optical element can be formed on the surface of the stage. The rectangular stage is not found in German et al. patent. For simplicity, only few differences have been discussed above even though further differences would be apparent to those of a skilled artisan.

As mentioned above, German et al. patent does not teach detailed steps for forming each element of a micro-actuator. Even if that were so, the steps would be different from those recited in the present application since the micro-actuators disclosed by German et al. have different structures and functional mechanisms from the presently claimed invention. Thus, Applicants respectfully submit that German et

al. patent is irrelevant to the present application insofar as, *inter alia*, the method limitations of claims 1-9 are concerned.

Based on the reasons set forth above, Applicants respectfully submit that Jerman et al. patent fails to teach the steps of "forming a top structure ..." and "forming a bottom structure..." as recited in claim 1. Sparks et al. are silent on these steps. As the cited references, taken individually or in combination, do not teach all of the limitations of the claimed invention, Applicants respectfully submit that a *prima facie* case of obviousness has not been established and claim 1 is patentable.

To improve readability, claim 1 and other claims have been amended. Support for the changes can be found in FIGS. 1-3, for example. Claims 2-9 depend from independent claim 1, and as such, are also patentable for at least the same reasons. Accordingly, Applicants request that the rejection of claims 1-9 be withdrawn and that an indication of allowance be issued.

### ***Conclusion***

Based on the reasons as set forth above, Applicants respectfully request allowance of all pending claims including 1-11.

In the event that there are any questions concerning this paper, or the application in general, the Examiner is respectfully urged to telephone Applicants' undersigned representative so that prosecution of the application may be expedited.

Respectfully submitted,

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